COOLING SYSTEM 24

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GENERAL DESCRIPTION

This section covers the removal and installation of the components that comprise the cooling system, and where necessary the overhaul of these components.

The three types of engine fitted in the Transit are the 'Kent' OHV in-line four cylinder, the OHC in-line four cylinder and the 'York' Diesel in-line four cylinder, all have similar cooling systems. These are pressurised impeller assisted thermo-syphon and incorporate a cooling radiator, water pump (water impeller), a thermostat and in most cases a heater radiator. Some variants have an additional circuit to operate the automatic choke.

The York Diesel variants use a cross-flow radiator for increased heat dissipation. A separate engine mounted remote radiator supply tank is used to maintain a constant coolant level, and water pressure at the water pump inlet. This pressure at the water pump is necessary to prevent cavitation within the pump. Cavitation is water pressure variation, (low pressure areas) within the pump which can cause increased wear of the impeller vains.

The OHV and OHC engine variants use the more conventional down-flow radiator with the bottom hose connected to the water pump.

All models contain a 25% solution of FORD anti-freeze, which contains a powerful corrosion inhibitor and should not be diluted. For certain territories because of the climate, anti-freeze is not required and the system is filled with a corrosion inhibitor at a concentration of 1 part inhibitor to 39 parts water.

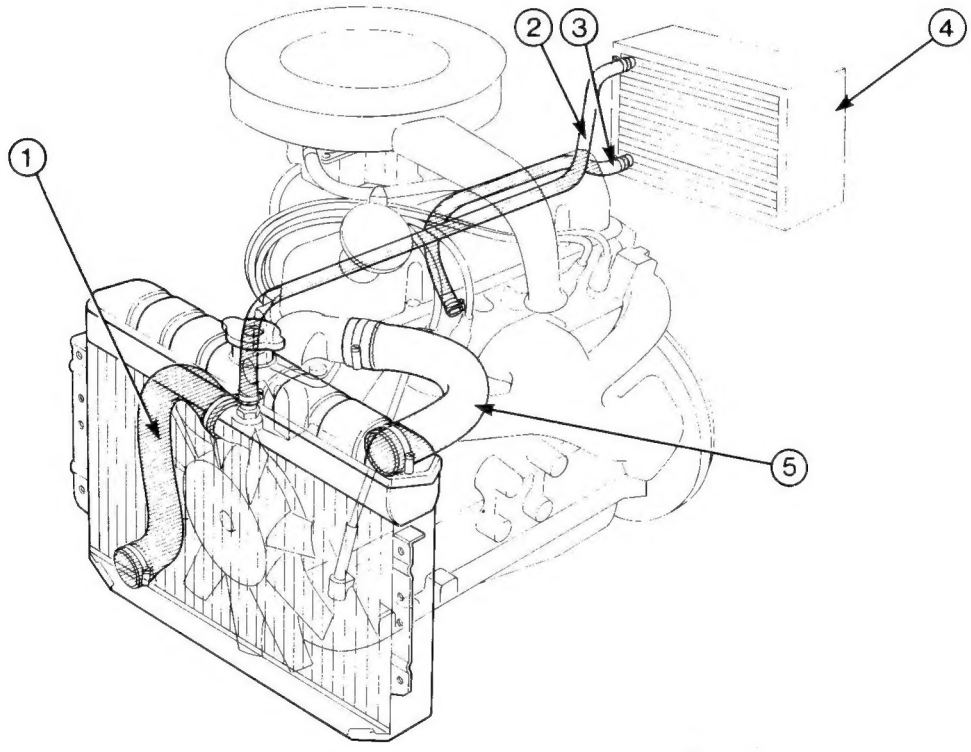

Fig. 1. Cooling system layout on OHV (Kent) engine variants.

1. Bottom hose
2. Heater outlet hose
3. Heater inlet hose
4. Heater matrix
5. Top hose

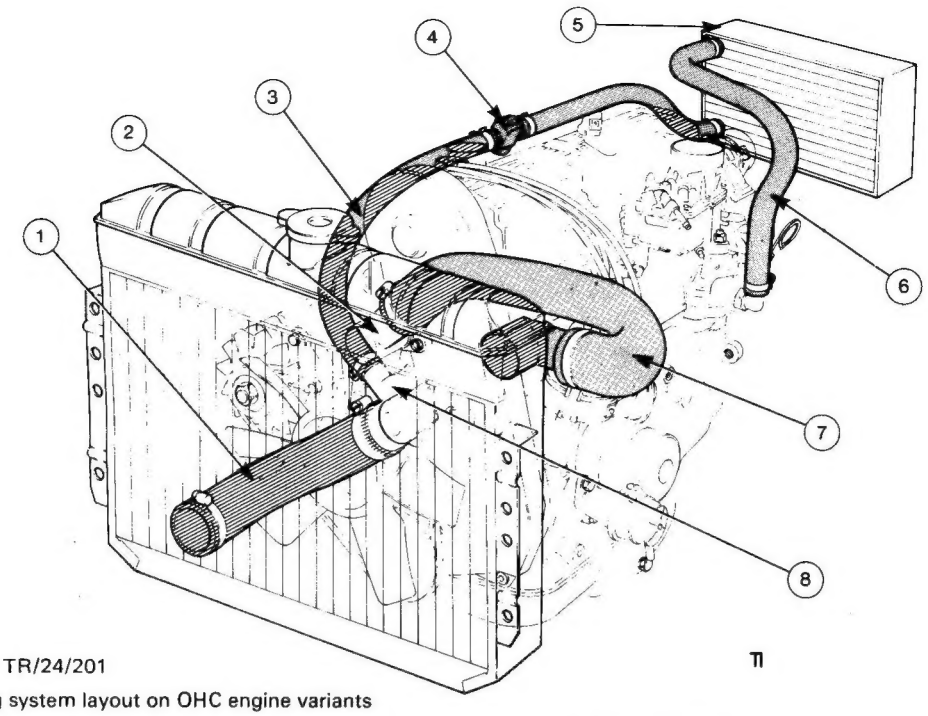

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Fig. 2. Cooling system layout on OHC engine variants

1. Bottom hose
2. Thermostat housing
3. Heater inlet hose
4. Heater shut-off valve
5. Heater matrix
6. Heater outlet hose
7. Top hose
8. Water pump

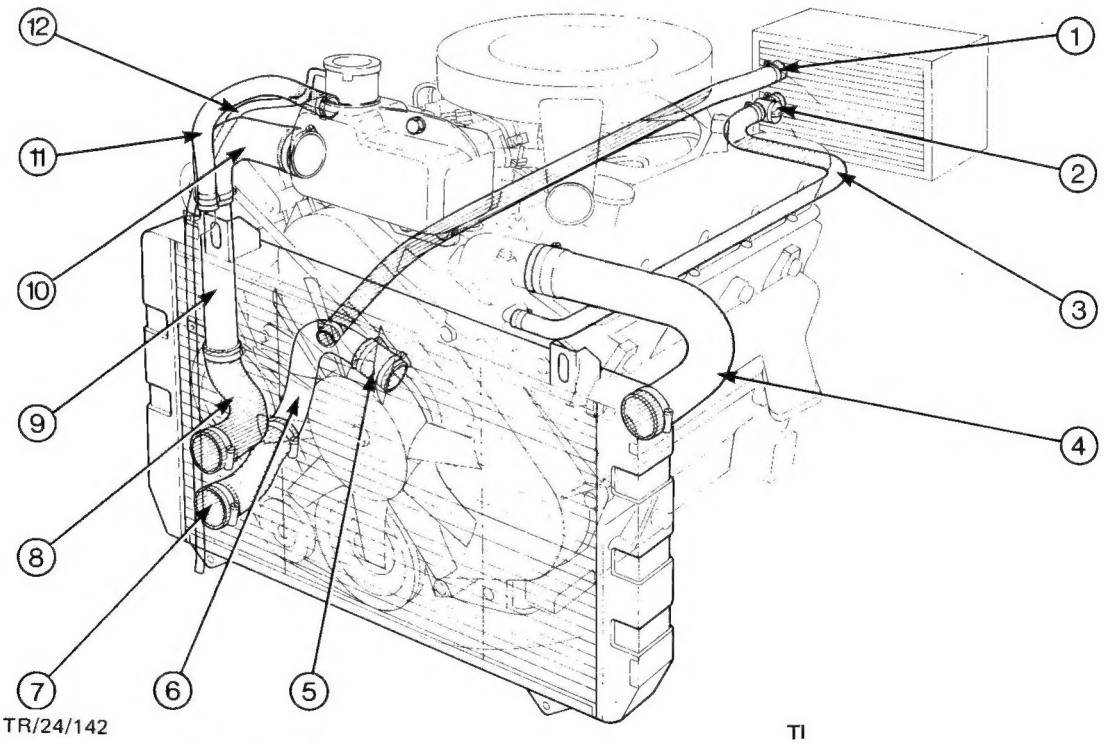

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Fig. 3. Cooling system layout on Diesel engine variants

1. Hose – heater outlet
2. Heater shut-off valve
3. Hose – heater inlet
4. Top hose
5. Bottom hose – water pump to metal pipe
6. Bottom hose – metal pipe section
7. Bottom hose – metal pipe to radiator
8. Hose – radiator overflow – lower
9. Metal pipe – radiator overflow
10. Hose – radiator overflow – upper
11. Hose – radiator air bleed
12. Pipe – overflow to atmosphere

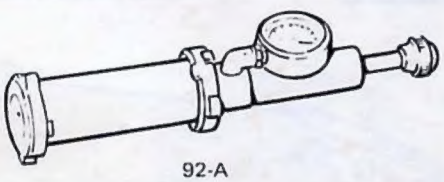
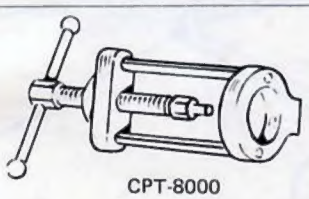
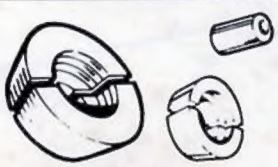
PRINCIPLE OF OPERATION

When the coolant is cold, the thermostat is in the closed position and the water flow is restricted to within the cylinder block, cylinder head, inlet manifold, heater, and where applicable, the automatic choke housing. An internal by-pass passage, (or hose on certain variants) allows circulation within the cylinder block and head during this period.

As the temperature increases the thermostat opens allowing the coolant to pass into the radiator. The coolant then flows through the radiator tubes and is cooled by air passing through the cooling fins assisted by the cooling fan. Coolant is then circulated from the base of the radiator up through the pump and into the cylinder block to complete the circuit.

Diesel variants have an expansion tank in addition to the radiator, this tank is secured to the engine at a level above the cross-flow radiator. Two hoses connect the remote supply tank to the radiator, one is a large bore hose which feeds the radiator as water is poured into the filler neck in the supply tank on initial filling and subsequent topping up. The other pipe is a small bore hose and is sited between the top of the radiator and the top of the supply tank. This hose is an air bleed to prevent air locks within the radiator. When topping up the cooling system the water level should not be allowed to cover the upper (small bore) pipe outlet.

SPECIAL SERVICE TOOL RECOGNITION

Tool	Tool Name
 92-A	Cooling System pressure tester
 CPT-8000	Hand press main tool and thrust block adaptor
 P-8000-4B	Water pump overhaul kit adaptors used with CPT-8000

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SERVICE AND REPAIR OPERATIONS CONTENT – PART 'A'

COOLING SYSTEM		Described in this Publication	Contained in Operation
24 254	Radiator – Remove and Install	X	
24 404	Water Pump assembly – Remove and Install	X	
24 404 8	Water Pump assembly – Overhaul (water pump removed)	X	
24 454	Thermostat – Remove and Install	X	
24 604	Hose – radiator top – Replace	—	24 618
24 605	Hose – radiator bottom – Replace	—	24 618
24 607	Hose – expansion tank to radiator – Replace	X	
24 608	Hose – overflow, expansion tank to radiator – Replace	X	
24 618	Hoses – radiator – Replace (All)	X	
24 624	Hoses – water inlet connecting – Replace (all)	—	24 654
24 627	Hose – water pump connecting – Replace	—	24 628
24 628	Hose – Thermostat by-pass – Replace	X	
24 648	Hoses – engine – Replace (all)	—	24 654
24 654	Hoses – engine and radiator – Replace (all)	X	

SERVICE AND REPAIR OPERATIONS CONTENTS – PART 'B'

STARTING SYSTEM		Described in this Publication	Contained in operation	Also applicable to certain variants in the following model range.					
				Transit '77	Fiesta	Escort '75 onwards	Capri	Taunus '76 Cortina '77	Granada '78
24 111	Cooling System – pressure text	X		X	X	X	X	X	X
24 122	Cooling System – Flush & Re-fill with cooling mixture	X		X	X	X	X	X	X
24 203	Fan Belt – Adjust	—	24 205						
24 205	Fan Belt – Replace (Includes adjust)	X		X	X	X	X	X	X
24 212	Fan – Remove and Install	X		X		X	X	X	
24 216	Pulley – Fan – Remove and Install	—	24 212						
24 254 4	Cooling System – Back flush (radiator removed)	X		X	X	X	X	X	X
24 451 1	Thermostat – Test (Thermostat removed)	X		X	X	X	X	X	X

SERVICE AND REPAIR OPERATIONS – PART 'A'

24 254 RADIATOR – REMOVE AND INSTALL (All variants except Diesel)

Special Service Tools Required: None

To Remove

1. Open hood and fit fender covers.
2. Disconnect battery. Remove radiator cap.

   NOTE: When removing cap rotate through approx. 90° to allow system to depressurise before fully removing cap.
3. Position clean drain tray below vehicle, disconnect bottom hose at radiator and allow to drain.
4. Disconnect top hose at radiator.
5. Remove four bolts and guide out radiator assembly, fig. 4.
6. With radiator removed, detach overflow pipe and clips.

To Install

7. Reassemble overflow pipe and clips to radiator.
8. Guide radiator into position in vehicle and secure using four bolts.
9. Reconnect top and bottom hoses to radiator.

   NOTE: First check hoses for cuts, splits etc, and renew if required.
10. Refill cooling system with specified anti-freeze or rust inhibitor water solution. Refit radiator cap.
11. Reconnect battery.
12. Run engine and check for leaks.
13. Check and top up coolant level as required.
14. Remove fender covers and close hood.

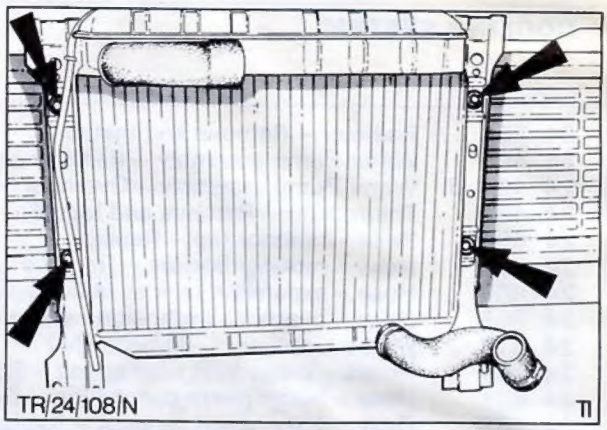

Fig. 4. Arrows show radiator mounting bolts. Viewed from engine compartment for clarity

24 254 RADIATOR – REMOVE AND INSTALL (Diesel variants)

Special Service Tools Required: None

To Remove

1. Open hood and fit fender covers. Disconnect battery.
2. Remove cooling system filler cap located on expansion tank.

   NOTE: When removing cap rotate through approx. 90° to allow system to depressurise before fully removing cap.

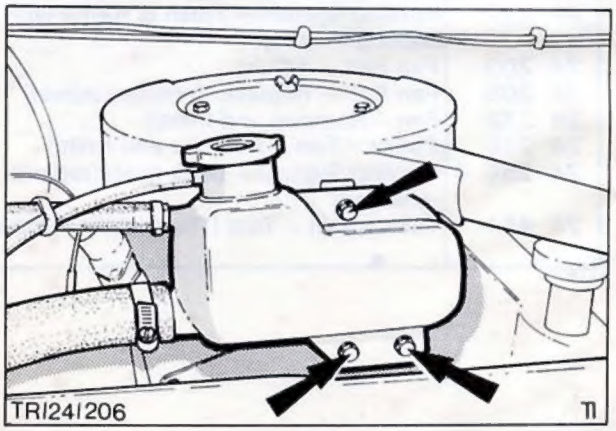

Fig. 5. Header tank showing securing bolts

PART 'A'

3. Position a clean drain tray below vehicle, disconnect bottom hose at radiator and allow to drain.

4. Disconnect top hose from radiator.

5. On variants that use an electro, ignition—controlled engine stop incorporating a metal cable, unclip engine stop-control cable from the two retaining clips on the front panel.
On variants that use a manual, fascia mounted control incorporating a plastic coated cable, remove plastic clip that secures the cable to top hose.
Unbolt expansion tank from retaining bracket. (Alternatively unbolt tank and bracket from engine).

6. Unbolt overflow pipe from inner fender panel, Fig. 8.

7. Remove two lower and two upper radiator mounting bolts, Fig. 6, noting which way rubber bushes are fitted. Guide radiator and expansion tank from vehicle.

To Install

8. Guide radiator and expansion tank into vehicle and secure using rubber bushes and bolts, Fig. 7.

9. Secure the overflow pipe to the inner fender panel with two bolts, Fig. 8.

10. Secure expansion tank to its brackets.

11. Reconnect top and bottom hoses to radiator and secure with clips.

12. Fit engine stop-control cable into its two clips, or in the case of plastic coated cable refit plastic strap retaining cable to top hose.

13. Refill cooling system with specified anti-freeze or rust inhibitor water solution. Refit radiator cap.

14. Reconnect battery, start and run engine and check for any leaks.

15. Check and top up coolant level as required.

16. Remove fender covers and close hood.

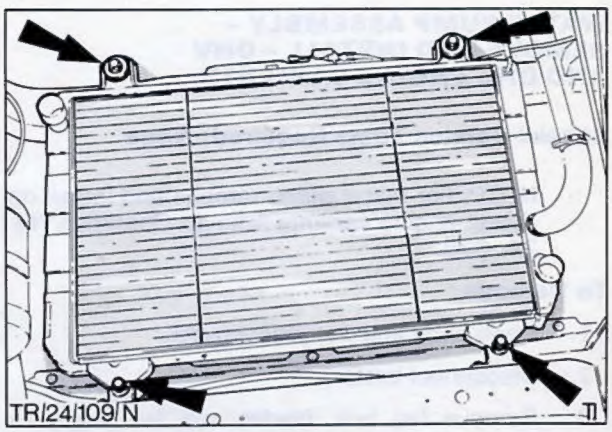

Fig. 6. Arrows depict radiator mountings (Viewed from engine compartment for clarity)

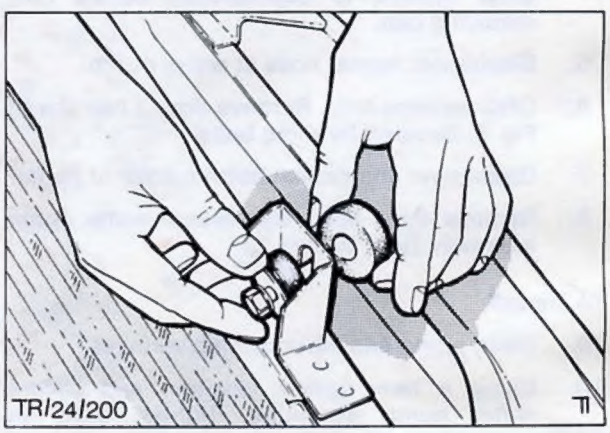

Fig. 7. Secure radiator ensuring bushes are positioned as shown

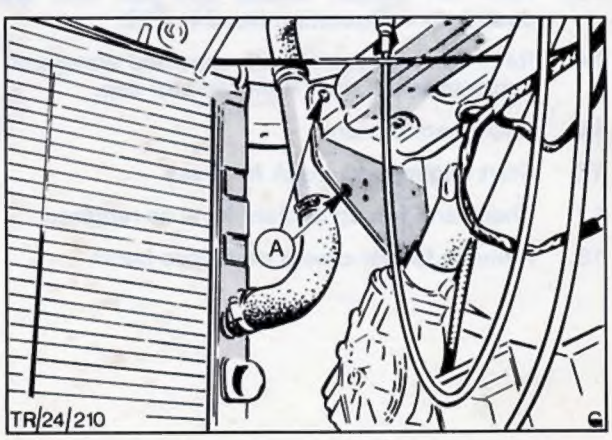

Fig. 8. A – Two securing bolts accessible from reverse side (Viewed from engine compartment for clarity)

PART 'A'

WATER PUMP ASSEMBLY – REMOVE AND INSTALL – OHV AND OHC ENGINE VARIANTS

Special Service Tools Required: None

NOTE: For water pump remove and install on Diesel engine variants refer to Operation No. 24 628.

To Remove

1. Open hood and fit fender covers.
2. Disconnect battery.
3. Remove fan belt, blades and fan pulley as detailed in Operation No. 24 212.
4. Position a clean drain tray below vehicle, disconnect bottom hose at radiator and allow to drain. Remove radiator cap taking care to rotate cap through approximately 90° to allow system to depressurise before fully removing cap.
5. Disconnect heater hose at water pump.
6. OHC variants only. Remove timing belt cover, Fig. 9. Secured by three bolts.
7. Disconnect and detach bottom hose at pump.
8. Remove three bolts and detach water pump assembly Figs. 10 and 11.

To Install

9. Clean pump and block mating surfaces.
10. Using a new gasket, position and secure water pump assembly. Tighten bolts to correct torque.
11. OHC variants only. Refit timing belt cover.
12. Reconnect heater hose and bottom hose to pump.
13. Refit fan pulley, blades and fan belt, as described in Operation No. 24 212.
14. Refill cooling system with specified water and anti-freeze solution. Refit radiator cap.
15. Reconnect battery.
16. Start engine and check for leaks.
17. Check and top up coolant level as required.
18. Remove fender covers and close hood.

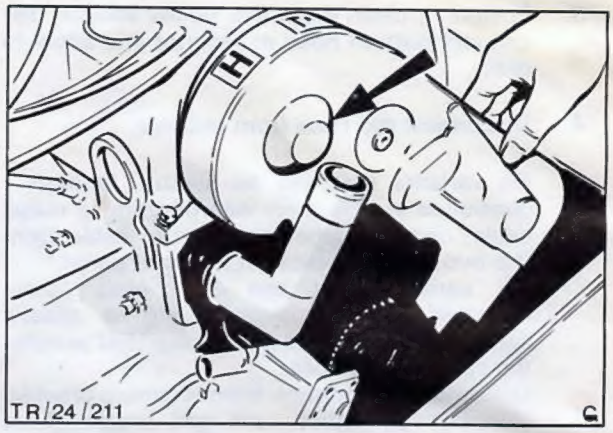

Fig. 9. Timing belt cover as fitted on all OHC variants

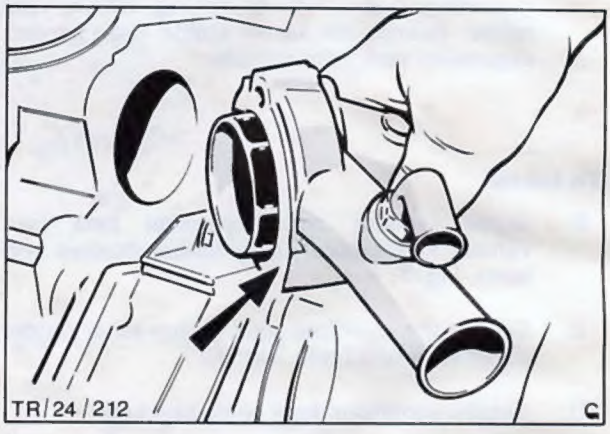

Fig. 10. Water pump removal (1.6 litre Kent variant)

Fig. 11. Water pump removal (OHC variant)

PART 'A'

24 404 8 WATER PUMP ASSEMBLY – OVERHAUL (Water pump removed) OHV and OHC engine variants

Special Service Tools Required:

Split ring	P-8000-4B
Thrust block adaptors and Press	CPT-8000

To Overhaul

1. Withdraw pump pulley hub from shaft by supporting hub over a split ring 'C' in Fig. 12 mounted in a press 'A' in Fig. 12 and pressing shaft and pump assembly clear.

2. Support pump body on press and press out bearing shaft, seal and impeller as an assembly, from pump body, Fig. 12.

3. Support impeller over a split ring mounted in press, Fig. 13, taking care that impeller blades are clear of slots between two halves of split ring. Press shaft through impeller.

4. Slide pump seal from bearing shaft.

5. Support pump body on press, and applying pressure on outer ring of bearing, press bearing shaft into pump housing.

6. Using ring and thrust block adaptor, Fig. 14 press pump pulley hub onto front end of shaft until end of shaft projects 1,5 mm (0,06 in) from end of hub.

7. Push new seal over shaft and into counter-bore in water pump housing.

8. Press impeller onto shaft, Fig. 14, until a clearance of 0,8 mm (0,03 in) is obtained between impeller blades and housing face.

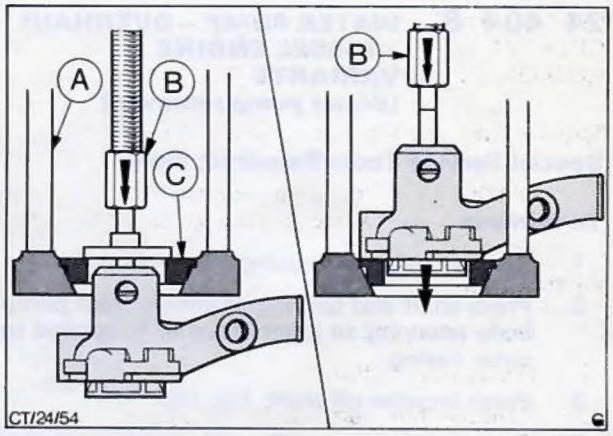

Fig. 12. Pressing pump pulley hub from shaft and bearing shaft assembly from pump body
A – Press
B – Thrust block adaptor
C – Split ring

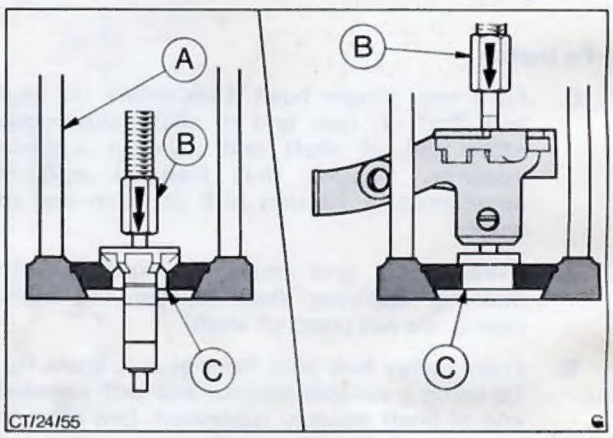

Fig. 13. Pressing impeller from bearing shaft assembly and pump pulley hub onto front end of shaft
A – Press
B – Thrust block adaptor
C – Split ring

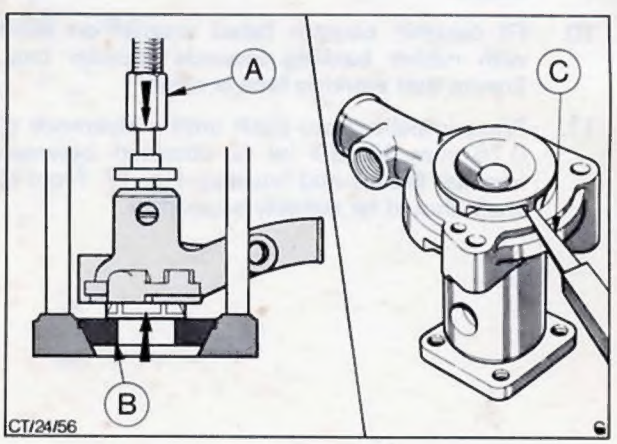

Fig. 14. Pressing impeller onto shaft and checking clearance with feeler gauges
A – Thrust block adaptor
B – Split ring
C – Feeler gauges

PART 'A'

24 404 8 WATER PUMP – OVERHAUL – DIESEL ENGINE VARIANTS (Water pump removed)

Special Service Tools Required: None

To Remove

1. Remove pulley hub using a suitable puller.
2. Press shaft and bearing assembly from pump body ensuring an even pressure is applied to outer casing.
3. Press impeller off shaft, Fig. 15.
4. Remove seal assembly and ceramic counter face and, if necessary, remove slinger bush from shaft.
5. Clean and inspect all parts.

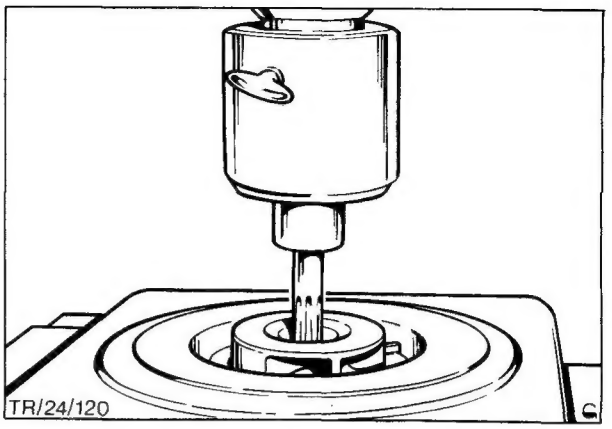

Fig. 15. Press impeller off shaft

To Install

6. Fit a new slinger bush if necessary (flanged end first) on rear end of shaft, supporting other end of shaft and using a suitable adaptor. Ensure that flanged end is approximately 13 mm (0,5 in) from end of shaft.
7. Press shaft and bearing assembly into housing, applying even pressure to outer casing. Do not press on shaft.
8. Press pulley hub onto front end of shaft Fig. 16 using a suitable adaptor and with impeller end of shaft suitably supported. End of shaft should be flush with end of pulley.
9. Press seal fully into housing. Press on flange ensuring that flange inner face is flush with housing face, spring facing uppermost and that 'plastic' face is not damaged and is clean.
10. Fit ceramic counter faced washer on shaft with rubber backing towards impeller face. Ensure that working face is clean.
11. Press impeller onto shaft until a clearance of 0,76 mm (0,030 in) is obtained between impeller blades and housing. Fig. 17. Front of shaft should be suitably supported.

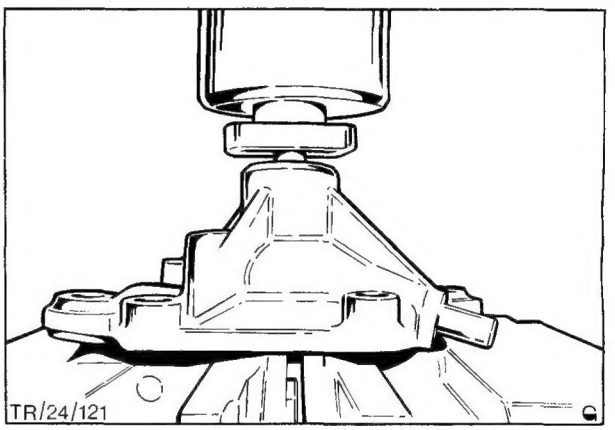

Fig. 16. Press pulley hub onto front end of shaft

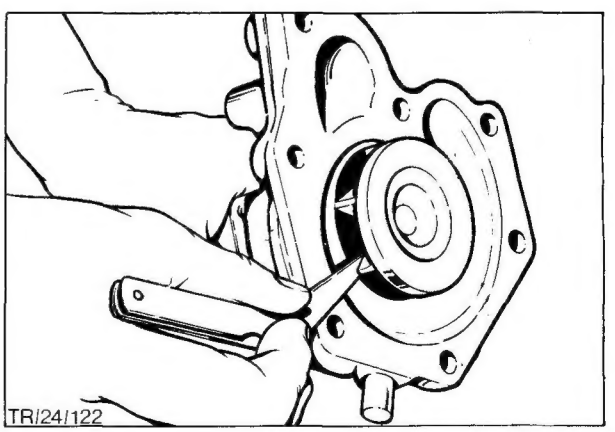

Fig. 17. Ensure a clearance of 0,76 mm (0,030 in) at point indicated

PART 'A'

24 454 THERMOSTAT – REMOVE AND INSTALL

Special Service Tools Required: None

To Remove

1. Open hood, fit fender covers and disconnect battery.
2. Remove radiator cap.

   NOTE: When removing cap rotate through approx. 90° to allow system to depressurise before fully removing cap.
3. Position a clean drain tray below vehicle, disconnect bottom hose at radiator and allow coolant to drain.
4. Slacken and remove top hose from thermostat housing.
5. Remove two thermostat housing bolts.

   NOTE: Bolts used on Diesel variants are of unequal lengths, Fig. 18.
6. Remove thermostat housing and thermostat, Figs. 19 and 20.

To Install

7. Ensure jointing faces of cylinder head and housing are clean and free from old gasket, sealer etc. Fit thermostat into locating groove in cylinder head aperture.
8. Refit thermostat housing using a new gasket and a small quantity of sealer. Secure housing with bolts and tighten to correct torque.
9. Refit top hose to thermostat housing and secure hose clamps.
10. Connect bottom hose to radiator, refill cooling system with specified anti-freeze or rust inhibitor water solution. Refit radiator cap.
11. Reconnect battery, start engine and check for any leaks.
12. Check and top up coolant level as required.
13. Remove fender covers and close hood.

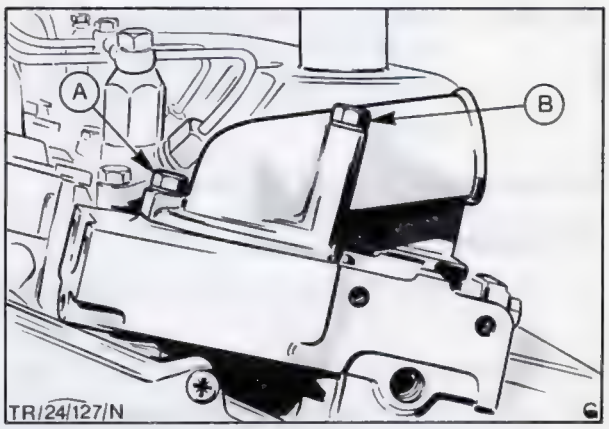

Fig. 18. Thermostat housing bolts (Diesel engine)
A – Short bolt
B – Long bolt

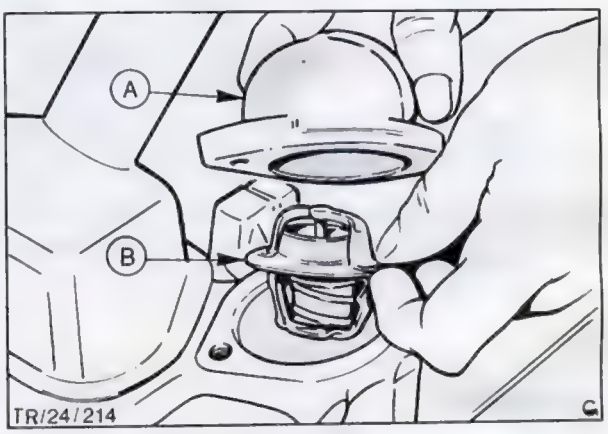

Fig. 19. Thermostat removal (Kent engine)
A – Thermostat housing
B – Thermostat

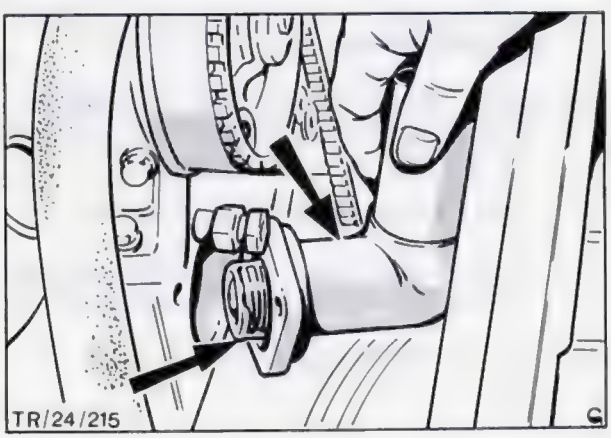

Fig. 20. Thermostat and housing removal (OHC engine)

PART 'A'

24 607 HOSE – EXPANSION TANK TO RADIATOR – REPLACE

Includes drain and refill cooling system (Diesel Engine variants only)

Special Service Tools Required: None

To Remove

1. Open hood, fit fender covers and disconnect battery.
2. Disconnect battery and remove radiator cap.

   NOTE: When removing cap, rotate through approx. 90° to allow system to de-pressurise before fully removing cap.
3. Disconnect expansion tank-to-radiator hose from base of radiator and allow coolant to drain into a clean container.
4. Remove two bolts securing metal centre section of pipe to inner fender panel, Fig. 21.
5. Disconnect hose from expansion tank and guide hose assembly clear of vehicle.
6. Loosen clips securing two flexible hose sections to centre metal section and separate three parts, Fig. 22.

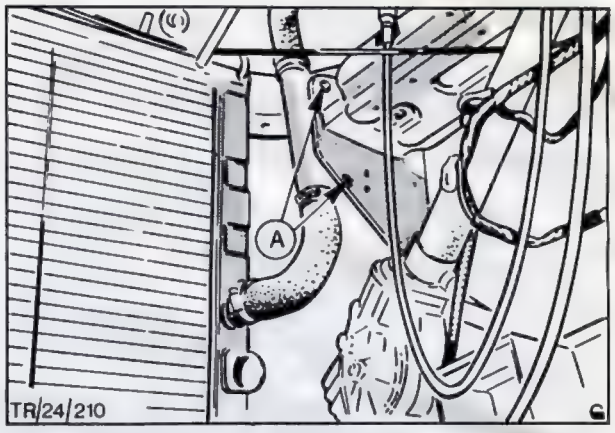

Fig. 21. Hose Removal
A – Two securing bolts accessable from reverse side
(Viewed from engine compartment for clarity)

To Replace

7. Assemble new hose sections to metal pipe and secure with clips.
8. Align assembly into vehicle and locate with two bolts to inner fender cover. Tighten bolts.
9. Connect hose to expansion tank and radiator. Securely tighten clips.
10. Refill cooling system with specified anti-freeze or rust inhibitor and water solution to correct level.
11. Refit radiator cap and reconnect battery.
12. Start engine and check for leaks. Recheck cooling system level and top-up as required.
13. Remove fender covers and close hood.

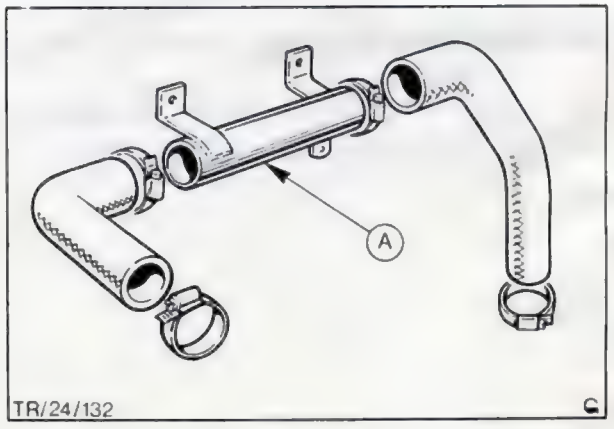

Fig. 22. Hose assembly in component form
A – Metal section

PART 'A'

24 608 HOSE – OVERFLOW (AIR BLEED) EXPANSION TANK TO RADIATOR – REPLACE
(Diesel engine variants only)

Special Service Tools Required: None

NOTE: There should be no necessity to drain the cooling systems as this hose is an air bleed hose only and does not contain coolant.

To Remove

1. Open hood and fit fender covers.
2. Disconnect battery and remove radiator cap.

   NOTE: When removing cap, rotate through approx. 90° to allow system to depressurise before fully removing cap.
3. Disconnect small plastic waste pipe from hose by releasing plastic retainer clips, (two) Fig. 23.
4. Disconnect expansion tank-to-radiator overflow hose from radiator by cutting hose clip with a pair of cutters.
5. Disconnect hose from expansion tank and remove, Fig. 23, by cutting through hose clip with a suitable pair of cutters.

To Replace

6. Place new clips to new hose.
7. Connect hose to expansion tank and radiator aperture. Securely tighten clips.
8. Refit radiator cap and reconnect battery.
9. Remove fender covers and close hood.

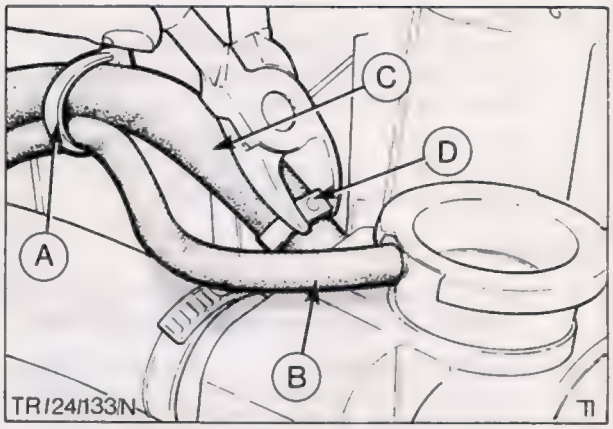

Fig. 23. Cutting non-reuseable clip from hose
A – Plastic retaining clip
B – Plastic pipe
C – Hose to be replaced
D – Disposable clip

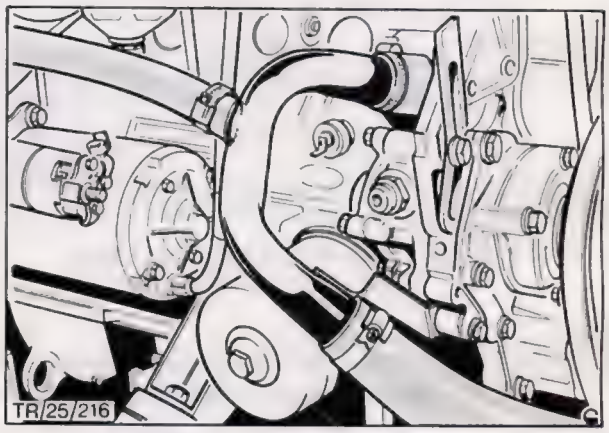

Fig. 24. Heater hose

24 618 HOSES, RADIATOR – REPLACE (ALL)

Special Service Tools Required: None

To Remove

1. Open hood, fit fender covers.
2. Disconnect battery.
3. Remove radiator cap.

   NOTE: When removing cap, rotate through approx. 90° to allow system to depressurise before fully removing cap.
4. Position a clean drain tray below vehicle, disconnect bottom hose from radiator and allow to drain.
5. Disconnect top hose from radiator and thermostat housing and detach, Fig. 25.
6. On Diesel variants, disconnect heater outlet hose from centre metal section of pipe in bottom hose, Fig. 24.

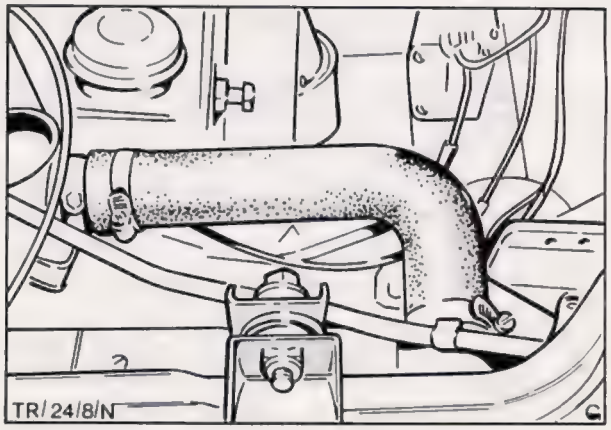

Fig. 25. Top hose on Diesel variants showing clips and location

PART 'A'

7. Disconnect bottom hose from pump location. Remove bolt securing metal pipe section to cylinder block Fig. 24, and detach bottom hose assembly complete.
8. On Diesel variants loosen clips that secure two flexible hose sections to centre metal section and separate three parts.

To Install

9. On Diesel variants assemble new hose sections to metal pipe and secure with clips.
10. Position bottom hose to pump and radiator and secure with clips. Refit bolt that secures metal centre section, to cylinder block and securely tighten.
11. On Diesel variants reconnect heater outlet hose to metal section of bottom hose and securely tighten clip.
12. Position top hose to thermostat and radiator and secure with clips.
13. Refill cooling system with specified anti-freeze water solution or rust inhibitor. Refit radiator cap.
14. Reconnect battery.
15. Start engine and check for leaks. Check and top-up coolant level as required.
16. Remove fender covers and close hood.

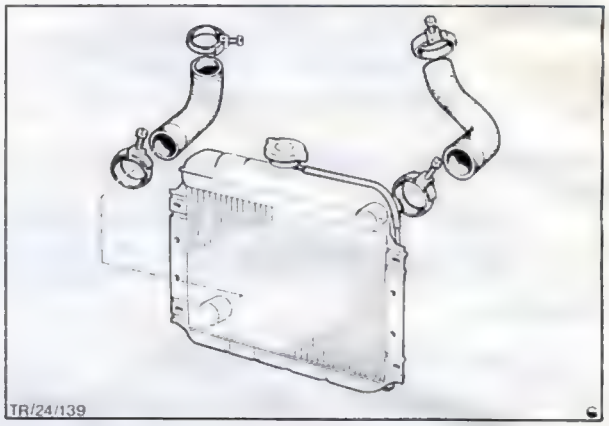

Fig. 26. Top and bottom hoses on OHC and OHV variants

24 628 HOSE-BY-PASS – REPLACE (Diesel engine variants)

Special Service Tools Required: None

To Remove

1. Open hood, fit fender covers, and disconnect battery.
2. Remove cooling system filler cap located on expansion tank.

   NOTE: When removing cap rotate through approx. 90° to allow system to depressurise before fully removing cap.
3. Position a clean drain tray below vehicle, disconnect bottom hose at radiator and allow to drain.
4. Disconnect top hose from radiator.
5. Unclip engine stop-control cable from two retaining clips on front panel. Unbolt expansion tank from retaining bracket.
6. Unbolt overflow pipe from inner fender panel.
7. Remove two lower and two upper radiator mounting bolts, noting which way rubber bushes are fitted. Guide radiator and expansion tank from vehicle.

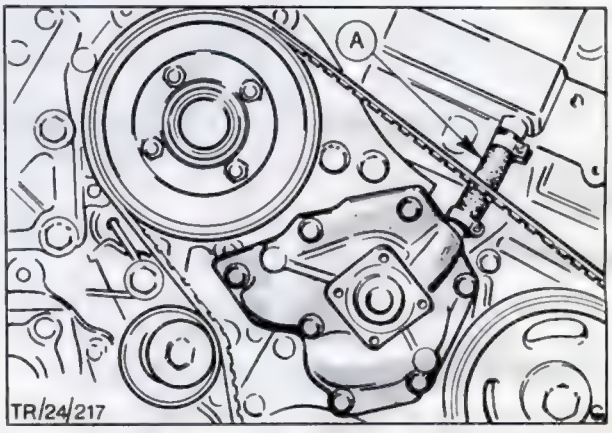

Fig. 27. Water pump assembly showing by-pass hose
A – By-pass hose

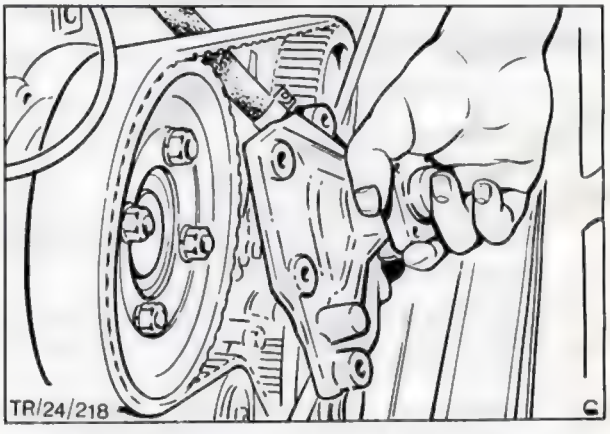

Fig. 28 Fitting the water pump assembly, (connect hose before positioning pump)

PART 'A'

8. Slacken off clamp nut on adjustable jockey pulley and remove auxiliary drive belt.

   Slacken off alternator mounting bolts and adjusting bolt. Tilt alternator towards engine and remove drive belt.

9. Remove four fan securing bolts and detach fan blade and pulley assembly.

10. Remove five retaining bolts securing timing belt cover to engine, guide cover over water pump shaft and lift clear of vehicle.

11. Slacken upper clamp securing by-pass hose to cylinder head. Remove seven bolts washers and spring washers securing water pump to front cover back plate and remove pump complete with by-pass hose.

12. Slacken clamp securing hose to pump and detach hose.

To Install

13. Position hose on water pump outlet and securely tighten hose clip.

14. Ensure jointing faces of pump and backplate are clean and free from old gasket, sealer etc. Using a new gasket and sealer position pump on backplate, Fig. 28, loosely engaging by-pass hose on cylinder head outlet. Retaining bolts noting that lower bolt hole on pump is used in conjunction with a dowel bolt to ensure correct alignment of pump housing.

15. There is a small turning clearance between impeller and water pump housing, to ensure that this clearance is maintained pump assembly must be turned, clockwise within limits of bolt holes. Tighten bolts, in any sequence, to specified torque.

16. Ensure by-pass hose is not kinked or buckled, Fig. 29 and then tighten clamp at cylinder head end of hose.

    Position timing belt cover on engine and secure with five securing bolts.

    Refit fan, pulley and hub and secure with four bolts and spring washers. Tighten bolts to specified torque.

17. Refit fan belt over crankshaft, water pump and alternator pulleys. Adjust belt to correct tension, refer to technical data page for details. Fig. 30.

18. Refit auxiliary drive belt over crankshaft outer pulley, vacuum pump and jockey pulleys. Adjust jockey pulley to give correct belt tension when measured at mid-point of longest span.

19. Guide radiator and expansion tank into vehicle and secure using rubber bushes and bolts.

20. Secure overflow pipe to inner fender panel with two bolts.

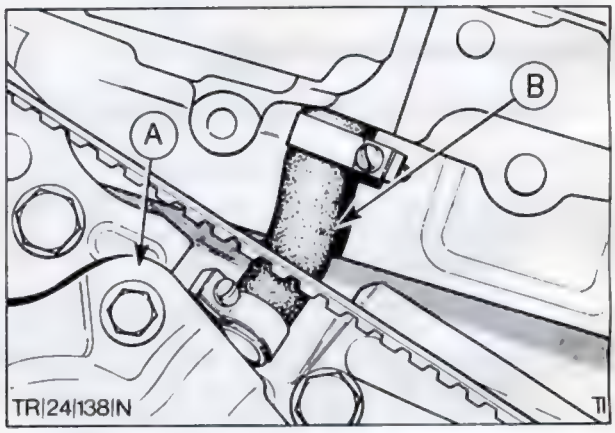

Fig. 29. A – Water pump
B – By-pass hose

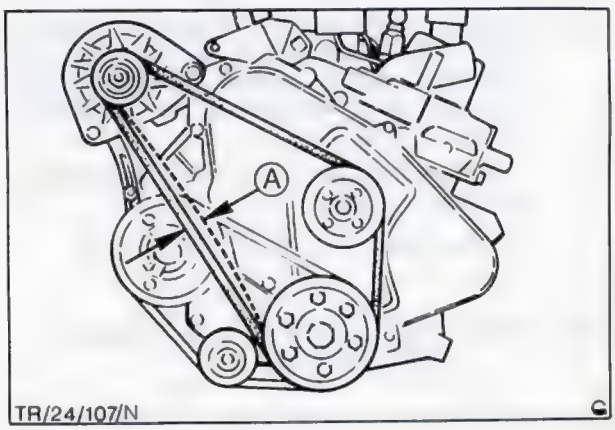

Fig. 30. Fan belt adjustment point 'A'
See technical data page for tension.

PART 'A'

21. Secure expansion tank to its bracket.
22. Reconnect top and bottom hoses to radiator and secure with clips.
23. Refit engine stop-control cable into its two clips.
24. Refill cooling system with specified anti-freeze or rust inhibitor water solution. Refit radiator cap.
25. Reconnect battery, start and run engine and check for any leaks.
26. Check and top up coolant level as required. Remove fender covers and close hood.

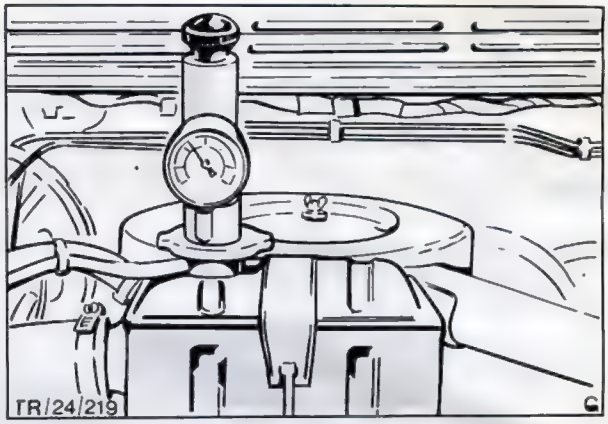

Fig. 31. Cooling system pressure test

PART 'B'

24 111 COOLING SYSTEM – PRESSURE TEST

Special Service Tools Required: None

Special Equipment Required: Pressure Tester

1. Open hood and fit fender covers.
2. Run engine to normal operating temperature and remove radiator cap, or expansion tank on Diesels, disconnect battery.

   NOTE: Adequately protect the cap, with thick rag or cloth before removal, to avoid possible scalding. When removing cap rotate through approx. 90° and pause to allow system to depressurise before fully removing cap.
3. Fit correct adaptor to pressure tester and clip in position onto filler neck, Fig. 31. Pump up cooling system to a maximum of 1,40 Bar (1,40 kg.cm^2) (20 lb.in^2) and hold for ten seconds. If pressure drops within this time inspect for leaks.
4. Transfer adaptors and fit radiator expansion tank cap to tester, pump up and note maximum steady pressure achieved, Fig. 32. Pressure relief specification is stamped on top face of cap.
5. Check coolant level, top up as required and reconnect battery.
6. Remove fender covers and close hood.

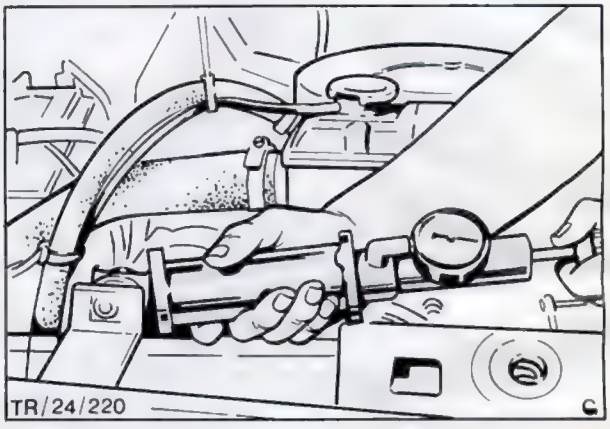

Fig. 32. Testing cap for correct pressure relief

24 122 COOLING SYSTEM – DRAIN AND REFILL

Special Service Tools Required: None

1. Open hood, fit fender covers.
2. Disconnect battery.
3. Remove radiator cap.

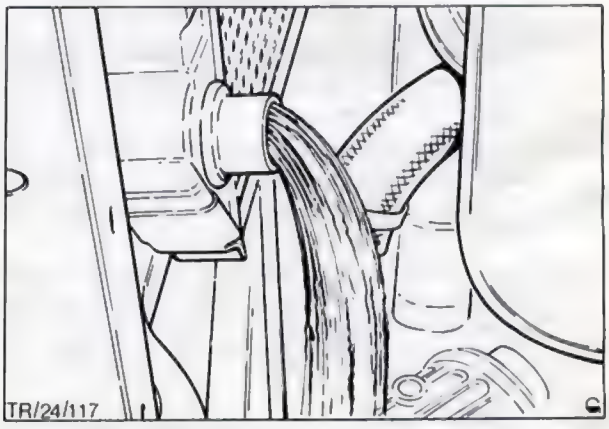

Fig. 33. Remove bottom hose and allow radiator to drain

PART 'B'

4. Position a clean drain tray below vehicle, open drain plug on engine block side, disconnect radiator bottom hose and allow system to drain, Fig. 33.

   NOTE: An anti-freeze solution has been used in the system and in certain territories a rust inhibitor. These solutions should be retained.

5. Close drain plug on engine block.
6. Refit bottom hose and secure.
7. Refill system with anti-freeze or rust inhibitor solution, refit radiator, or expansion tank cap.
8. Reconnect battery.
9. Run engine check for leaks. Top up system as necessary.
10. Remove fender covers, close hood.

24 205 FAN BELT – REPLACE (all variants except Diesel)

Special Service Tools Required: None

To Remove

1. Open hood and fit fender covers.
2. Disconnect battery.
3. Loosen alternator adjusting and mounting bolts and detach fan belt.

   To detach fan belt, swing alternator towards engine and twist belt off alternator pulley, Fig. 34.

To Install

4. Place fan belt in position, adjust and tighten mounting bolts to correct torque.

   Adjust belt to correct tension, refer to technical data page for details, Fig. 34.

5. Reconnect battery.
6. Remove fender covers and close hood.

24 205 FAN BELT – REPLACE (Diesel variants)

Special Service Tools Required: None

To Remove

1. Open hood, fit fender covers, and disconnect battery.
2. Slacken off clamp nut on adjustable jockey pulley and remove auxiliary drive belt, Fig. 35.
3. Slacken off alternator mounting bolts and adjusting bolt. Tilt alternator towards engine and remove belt.

Fig. 34. Fan belt adjustment (Kent engine variant illustrated)

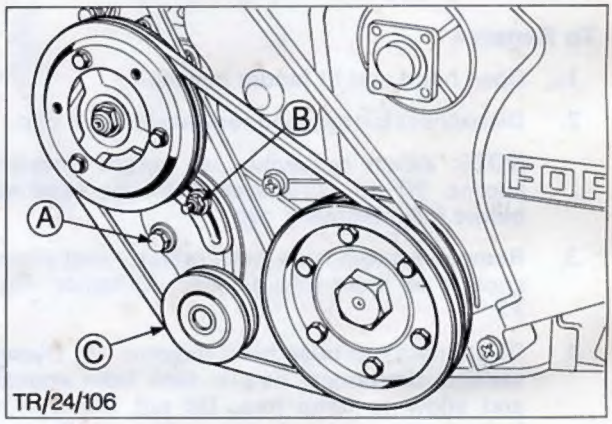

Fig. 35. Auxiliary belt adjustment
A – Jockey wheel pivot bolt
B – Adjuster nut
C – Jockey wheel

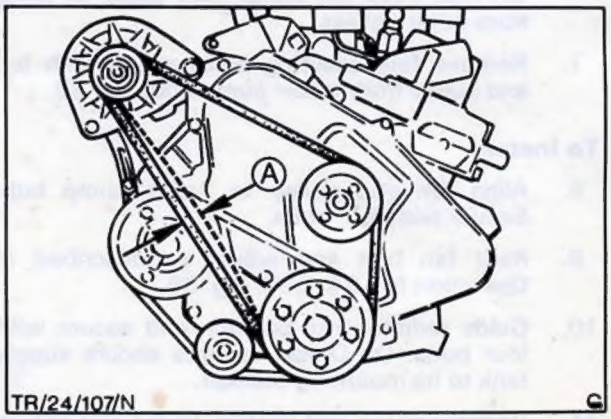

Fig. 36. Fan belt adjustment point 'A' see technical data page for tension

PART 'B'

To Install

4. Fit fan belt over crankshaft, water pump and alternator pulleys. Adjust belt to correct tension, refer to technical data page for details. Fig. 36.
5. Refit auxiliary drive belt over crankshaft outer pulley, vacuum pump and jockey pulleys. Adjust jockey pulley to give correct travel when checked at mid-point of longest span, Fig. 36.
6. Check tightness of alternator mounting bolts and belt, adjustment bolts. Reconnect battery, remove fender covers and close hood.

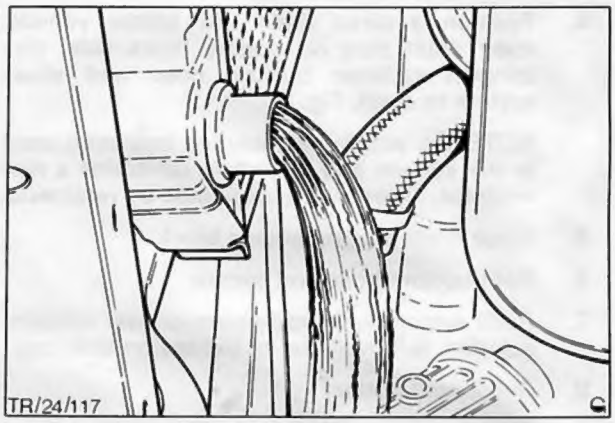

Fig. 37. Remove bottom hose and allow radiator to drain

24 212 FAN – REMOVE AND INSTALL

Special Service Tools Required: None

To Remove

1. Open hood and fit fender covers.
2. Disconnect battery and remove radiator cap.

   NOTE: When removing cap rotate through approx. 90° to allow system to depressurise before fully removing cap.
3. Remove bottom hose from radiator and allow coolant to drain into a clean container, Fig. 37.
4. Disconnect top hose from radiator. On Diesel variants disconnect header tank from engine and allow to hang free. Do not disconnect hoses.
5. Remove four radiator mounting bolts and guide radiator clear of vehicle.
6. Slacken alternator mounting bolts and remove fan belt. On Diesel variants unhook fan belt from fan pulley and allow to hang from other pulleys.
7. Remove four securing bolts and detach fan and pulley from water pump hub, Fig. 38.

To Install

8. Align fan and pulley to water pump hub. Secure with four bolts.
9. Refit fan belt and adjust as described in Operation No. 24 205, Fig. 39.
10. Guide radiator into position and secure with four bolts. On Diesel variants secure supply tank to its mounting bracket.
11. Reconnect top and bottom hoses and secure clips.

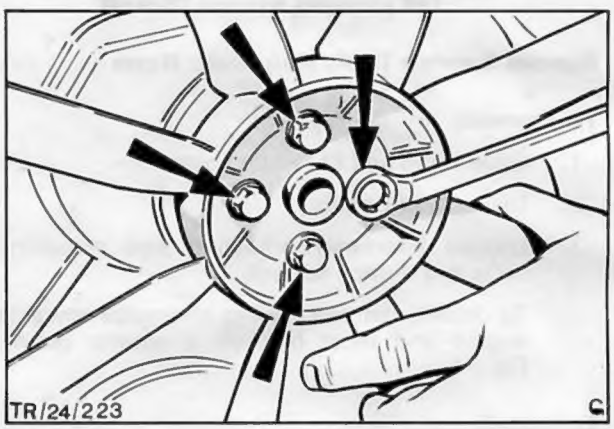

Fig. 38. Arrows depict four fan securing bolts

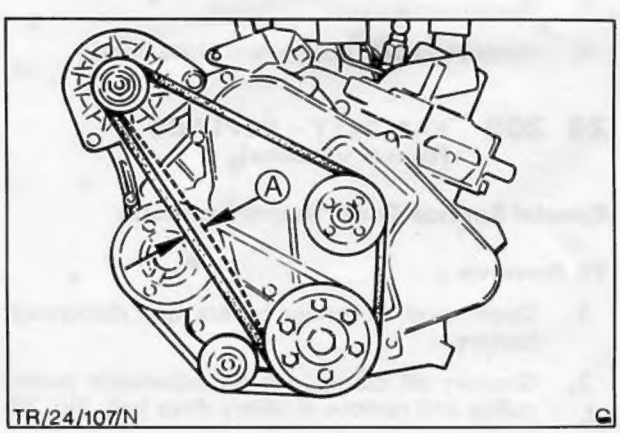

Fig. 39. Fan belt adjustment point 'A'
See technical data page for tension

PART 'B'

12. Refill cooling system with specified anti-freeze or rust inhibitor and water solution to correct level.
13. Refit radiator cap and reconnect battery.
14. Start engine and check for leaks.
15. Recheck cooling system level and top up as required.
16. Remove fender covers and close hood.

24 451 1 THERMOSTAT – TEST (Thermostat removed)

Special Service Tools Required: None

1. Suspend thermostat in water in a suitable container so that it does not touch sides of container, Fig. 40.
2. Gradually heat water, frequently checking temperature with an accurate thermometer. The thermometer must not touch container.
3. The thermostat should open at specified temperature. If it fails to function properly, do not attempt any adjustment, but replace with a new unit.

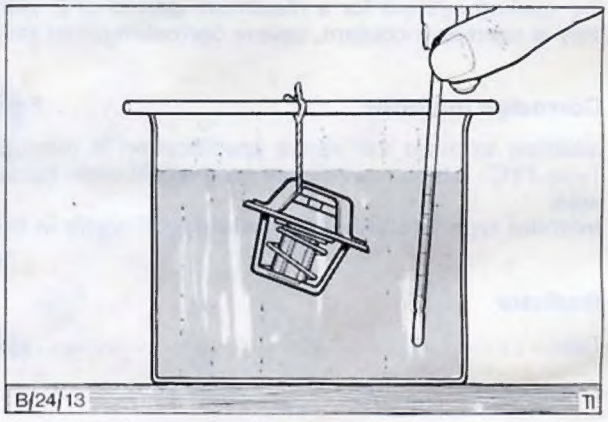

Fig. 40. Testing thermostat

24 254 4 COOLING SYSTEM – BACK FLUSH (Radiator removed)

1. Ensure radiator cap is in position, turn radiator upside down, position a high pressure water hose in the bottom hose location and back flush.
2. Remove thermostat housing and thermostat. Refer to Operation No. 24 454.
3. Position high pressure hose into engine via thermostat location and back flush engine, Fig. 41.
4. Using a new gasket refit thermostat and housing.

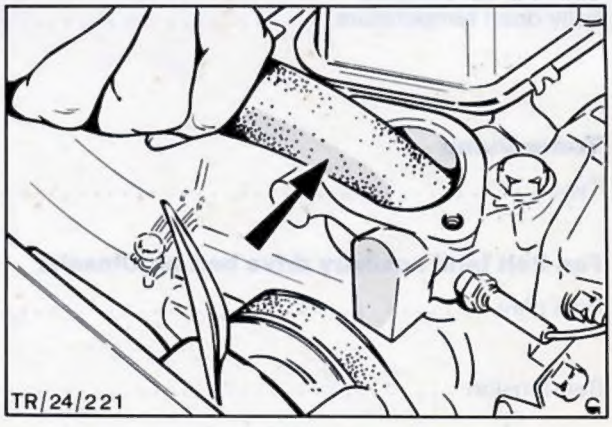

Fig. 41. Back flushing engine (Kent engine variant illustrated)

TECHNICAL DATA

Type ..... Pressured, forced circulation

Capacity	With heater	Without heater
1.6 litre OHV (Kent)	6,0 litres (10,6 pints)	5,0 litres (8,8 pints)
1.6 litre OHC	8,2 litres (14,4 pints)	7,2 litres (12,6 pints)
2.0 litre OHC	8,2 litres (14,4 pints)	7,2 litres (12,6 pints)
2.4 litre York Diesel	10,6 litres (18,65 pints)	9,6 litres (16,9 pints)

Anti-freeze ..... Ford Anti-freeze Plus; Part No. SSM-97B 9101-A

Concentration:

Specific Gravity (providing no other additive is in coolant)	Approximate Percentage of anti-freeze (by volume)	Remains fluid to		Solidifies at	
		°C	°F	°C	°F
1,042	25	−12	+10	−25	−20

A 25% concentration of Ford Anti-freeze Plus, which contains a powerful corrosion inhibitor, should remain in the cooling system for a maximum period of 2 years (regardless of climate) before being renewed. If water only is used as a coolant, severe corrosion could result.

Corrosion inhibitor .....Ford Specification SSM-97B 9100-A

Inhibitor to meet the above specification is manufactured by Ciba-Geigy Ltd., and is marketed as 'Inhibitor Type 71C', which is available on a world wide basis through the Head Office of the Ciba-Geigy group in your area.
Inhibitor type 71C should be mixed with water in the ratio of 1 part inhibitor to 39 parts water.

Radiator

Type	Corrugated High Efficiency Fin on tube Downflow on petrol engine variants Crossflow on Diesel variants incorporating a remote (engine mounted) header tank.
Pressure cap	0,9 Bar, 0,9 Kgf.cm², 13 lbf.in²

Thermostat

Type	Wax
Opening temperature	82 to 92 °C (180 to 198 °F)
Fully open temperature	99 to 102 °C (210 to 216 °F) (add ± 3 °C (5 °F) to above figures for used thermostats)

Water Pump

Type	Centrifugal impellor (belt driven for crankshaft)

Fan Belt (and auxiliary drive belt on Diesels)

Free play	10 mm (0,4 in) or 245–343 Nm (25–35 kgf) (56–77 lbf ft) at mid-point of longest span of belt applying normal fingertip pressure
Belt tension	25 to 35 kgf (56 to 77 lbf)

Tightening Torques	Nm	kgf.m	lbf.ft
Fan blades	6,8 to 9,5	0,69 to 0,97	5 to 7
Water pump	6,8 to 9,5	0,69 to 0,97	5 to 7
Thermostat housing	16,3 to 20,3	1,66 to 2,07	12 to 15